

What is claimed is:

1           1.       A method for transmitting a route request for a route between a source  
2 node and a destination node in an *ad-hoc* network and for transmitting a reply identifying the  
3 route, the *ad-hoc* network including a plurality of nodes including at least one master node in  
4 at least one piconet, said method comprising:

5           transmitting the route request from the receiving node in the *ad-hoc* network to  
6 the at least one master node of said at least one piconet via a unicast transmission; and

7           generating a route reply and sending the route reply to the source node, the  
8 route reply identifying the route in the *ad-hoc* network between the source node and the  
9 destination node.

1           2.       The method of claim 1, wherein the route request is received by the  
2 receiving node from another node in the at least one piconet.

1           3.       The method of claim 1, wherein the route request is generated within the  
2 receiving node.

1           4.       The method of claim 1, further comprising the steps of:

2           (a)       determining, before said step of transmitting, whether the route request  
3 has been previously received at the receiving node; and

4           (b)       ignoring the route request if it is determined in said step (a) that the route  
5 request has been previously received at the receiving node.

1           5.     The method of claim 4, wherein the route request is received by the  
2 receiving node from another node in the at least one piconet.

1           6.     The method of claim 4, wherein the route request is generated within the  
2 receiving node.

1           7.     The method of claim 1, further comprising the steps of:

2           (a)     determining, before said step of transmitting, whether the receiving node  
3 is a master node; and

4           (b)     determining whether the destination node is in the piconet of the  
5 receiving node if it is determined in said step (a) that the receiving node is a master node,  
6 wherein said step of generating a route reply and sending the route reply to the  
7 source node is performed if it is determined in said step (b) that the destination node is in the  
8 piconet of the node, and said step of transmitting is performed if it is determined in said step  
9 (b) that the destination node is not in the piconet of the receiving node.

1           8.     The method of claim 7, further comprising the step of adding the  
2 receiving node to a route list of a packet containing the route request before said step of  
3 generating a route reply if it is determined in said step (b) that the destination node is in the  
4 piconet of the receiving node.

1           9.     The method of claim 1, further comprising the steps of:

2 (a) determining, before said step of transmitting, whether the receiving node  
3 is a master node; and

4 (b) determining whether the receiving node is participating in multiple  
5 piconets if it is determined in said step (a) that the receiving node is not a master node,

6 wherein said step of transmitting the route request to a master node of the  
7 receiving node includes transmitting the route request if it is determined in said step (b) that the  
8 receiving node is not participating in multiple piconets.

1 10. The method of claim 9, further comprising the step:

2 (c) determining whether the destination node is in the piconet of the master  
3 node of the receiving node after said step (b),

4 wherein said step of generating a route reply and sending the route reply to the  
5 source node includes generating and sending the route reply if it is determined in said step (c)  
6 that the destination node is in the piconet of the master node of the receiving node, and said  
7 step of transmitting the route request includes transmitting the route request if it is determined  
8 in said step (c) that the destination node is not in the piconet of the master node of the  
9 receiving node.

1 11. The method of claim 10, wherein the step of transmitting the route  
2 request comprises transmitting the route request to master nodes in piconets other than the  
3 piconet from which the route request was received if it is determined in said step (b) that the  
4 receiving node is participating in multiple piconets.

12. The method of claim 11, further comprising the steps of:

(i) determining, before performing said step (a), whether the route request has been previously received at the receiving node; and

(ii) ignoring the route request if it is determined in said step (i) that the route request has been previously received at the receiving node.

13. The method of claim 1, further comprising the steps of:

(a) determining, before said step of transmitting, whether the receiving node is a master node; and

(b) determining whether the receiving node is participating in multiple piconets if it is determined in said step (a) that the receiving node is not a master node,

wherein said step of transmitting the route request includes transmitting the route request to master nodes in piconets other than the piconet from which the route request was received if it is determined in said step (b) that the receiving node is participating in multiple piconets.

14. A device-readable memory for a communication device, the memory storing device-readable instructions for transmitting a route request in an *ad-hoc* network and for generating a route reply identifying the route, the route request being one of received at and generated by the communication device for a route between a source node and a destination node in the *ad-hoc* network, the *ad-hoc* network including a plurality of nodes including the communication device and at least one master node in at least one piconet, said

7 memory comprising device-readable instructions for transmitting the route request from the  
 8 communication device in the *ad-hoc* network to the at least one master node of the at least one  
 9 piconet via a unicast transmission and for generating a route reply and sending the route reply  
 10 to the source node, the route reply identifying the route in the *ad-hoc* network between the  
 11 source node and the destination node.

1 15. The memory of claim 14, further comprising device-readable instructions  
 2 for determining whether the route request has been previously received at the communication  
 3 device before transmitting the route request and for ignoring the route request if it is  
 4 determined that the route request has been previously received at the communication device.

1 16. The memory of claim 14, further comprising device-readable instructions  
 2 for determining whether the communication device is a master node before transmitting the  
 3 route request and for determining whether the destination node is in the piconet of the  
 4 communication device if it is determined that the communication node is a master node,  
 5 wherein said device-readable instructions for generating a route reply and sending the route  
 6 reply to the source node include instructions for generating and sending the route reply if it is  
 7 determined that the destination node is in the piconet of the communication device, and said  
 8 device-readable instructions for transmitting the route request include instructions for  
 9 transmitting the route request if it is determined that the destination node is not in the piconet  
 10 of the communication device.

1           17.    The memory of claim 16, wherein said device-readable instructions for  
2   generating a route reply further include device-readable instructions for adding the  
3   communication device to a route list of a packet containing the route request before sending the  
4   route reply if it is determined that the destination node is in the piconet of the communication  
5   device.

1           18.    The memory of claim 14, further comprising device-readable instructions  
2   for determining, before transmitting the route request, whether the communication node is a  
3   master device and for determining whether the communication device is participating in  
4   multiple piconets if it is determined that the communication device is not a master node,  
5   wherein said device-readable instructions for transmitting the route request include instructions  
6   for transmitting the route request to a master node of the communication device if it is  
7   determined that the communication device is not participating in multiple piconets.

1           19.    The memory of claim 18, further comprising device-readable instructions  
2   for determining whether the destination node is in the piconet of the master node of the  
3   communication device, wherein the device-readable instructions for generating a route reply  
4   and sending the route reply to the source node include instructions for generating and sending  
5   the route reply if it is determined that the destination node is in the piconet of the master node  
6   of the communication device, and said device-readable instructions for transmitting the route  
7   request include instructions for transmitting the route request if it is determined that the  
8   destination node is not in the piconet of the master node of the communication device.

1           20.    The memory of claim 19, wherein said device-readable instructions for  
2 transmitting the route request include instructions for transmitting the route request to master  
3 nodes in piconets other than the piconet from which the route request was received if it is  
4 determined that the communication device is participating in multiple piconets.

1           21.    The memory of claim 20, further comprising device readable instructions  
2 for determining whether the route request has been previously received at the communication  
3 device before determining whether the communication device is a master node, and for  
4 ignoring the route request if it is determined that the route request has been previously received  
5 at the communication device.

1           22.    The memory of claim 14, further comprising device-readable instructions  
2 for determining, before transmitting the route request, whether the communication device is a  
3 master node and for determining whether the communication device is participating in multiple  
4 piconets if it is determined that the communication device is not a master node, wherein said  
5 device-readable instructions for transmitting the route request include instructions for  
6 transmitting the route request to master nodes in piconets other than the piconet from which the  
7 route request was received if it is determined that the communication device is participating in  
8 multiple piconets.

1           23.    A wireless communication device for transmitting a route request for a  
2 route between a source node and a destination node in an *ad-hoc* network and for generating a

3 route reply identifying the route, the route request being one of received at and generated by  
4 the device, wherein the *ad-hoc* network includes a plurality of nodes including the device and  
5 at least one master node in at least one piconet, said device comprising a transceiver and a  
6 memory storing device-executable instructions for transmitting the route request to the at least  
7 one master node of the at least one piconet via a unicast transmission and for generating a route  
8 reply and sending the route reply to the source node, the route reply identifying the route in the  
9 *ad-hoc* network between the source node and the destination node.

1 24. The device of claim 23, wherein said transceiver comprises a Bluetooth  
2 radio.

1 25. The device of claim 23, further comprising a protocol stack including a  
2 network layer and a link layer, said device-executable instructions comprising a part of said  
3 network layer.

1 26. The device of claim 25 wherein said network layer comprises a network  
2 block comprising device-executable instructions for *ad-hoc* networking, said device-executable  
3 instructions for transmitting the route request comprising a part of said device-executable  
4 instructions for *ad-hoc* networking.

1 27. The device of claim 23, further comprising a protocol stack including a  
2 network layer and a link layer, said device executable instructions comprising a part of said  
3 link layer.



1           28.    The device of claim 27, wherein said link layer comprises a Bluetooth  
2 driver with a personal area network profile, said device-executable instructions comprising a  
3 part of said personal area network profile.

1           29.    The device of claim 23, wherein said memory further comprises device-  
2 readable instructions for determining whether the route request has been previously received at  
3 the communication device before transmitting the route request and for ignoring the route  
4 request if it is determined that the route request has been previously received at the  
5 communication device.

1           30.    The device of claim 23, wherein said memory further comprises device-  
2 readable instructions for determining whether the communication device is a master node  
3 before transmitting the route request and for determining whether the destination node is in the  
4 piconet of the communication device if it is determined that the communication device is a  
5 master node, wherein the device-readable instructions for generating a route reply and sending  
6 the route reply to the source node include instructions for generating and sending the route  
7 reply if it is determined that the destination node is in the piconet of the communication node,  
8 and said device-readable instructions for transmitting the route request include instructions for  
9 transmitting the route-request if it is determined that the destination node is not in the piconet  
10 of the communication node.

1           31.    The device of claim 30, wherein said device-readable instructions for  
2   generating a route reply further include device-readable instructions for adding the  
3   communication device to a route list of a packet containing the route request before sending the  
4   route reply if it is determined that the destination node is in the piconet of the communication  
5   device.

1           32.    The device of claim 23, wherein said memory further comprises device-  
2   readable instructions for determining, before transmitting the route request, whether the  
3   communication device is a master node and for determining whether the communication device  
4   is participating in multiple piconets if it is determined that the communication device is not a  
5   master node, wherein said device-readable instructions for transmitting a route request include  
6   instructions for transmitting the route request to a master node of the communication device if  
7   it is determined that the communication device is not participating in multiple piconets.

1           33.    The device of claim 32, wherein said memory further comprises device-  
2   readable instructions for determining whether the destination node is in the piconet of the  
3   master node of the communication device, wherein said device-readable instructions for  
4   generating a route reply and sending the route reply to the source node include instructions for  
5   generating and sending the route reply if it is determined that the destination node is in the  
6   piconet of the master node of the communication device, and said device-readable instructions  
7   for transmitting the route request include instructions for transmitting the route request if it is

8 determined that the destination node is not in the piconet of the master node of the  
9 communication device.

1           34. The device of claim 33, wherein said device-readable instructions for  
2 transmitting the route request include instructions for transmitting the route request to master  
3 nodes in piconets other than the piconet from which the route request was received if it is  
4 determined that the communication device is participating in multiple piconets.

1           35. The device of claim 34, wherein said memory further comprises device-  
2 readable instructions for determining whether the route request has been previously received at  
3 the communication device before determining whether the communication device is a master  
4 node, and for ignoring the route request if it is determined that the route request has been  
5 previously received at the communication device.

1           36. The device of claim 23, wherein said memory further comprises device-  
2 readable instructions for determining, before transmitting the route request, whether the  
3 communication device is a master node and for determining whether the communication device  
4 is participating in multiple piconets if it is determined that the communication device is not a  
5 master node, said device-readable instructions for transmitting a route request including  
6 instructions for transmitting the route request to master nodes in piconets other than the piconet  
7 from which the route request was received if it is determined that the communication device is  
8 participating in multiple piconets.

